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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/723,529	11/26/2003	Joseph Marsala	TFF001PA.CIP	8668
7590	11/30/2005		EXAMINER	
Law Office of Barbara Joan Haushalter 228 Bent Pines Court Bellefontaine, OH 43311			JIANG, CHEN WEN	
			ART UNIT	PAPER NUMBER
			3744	

DATE MAILED: 11/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/723,529	Applicant(s) MARSALA, JOSEPH	
	Examiner Chen-Wen Jiang	Art Unit 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1,6,7,8,9,10,11 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Ashiwake et al. (U.S. Patent Number 5,406,807).

Ashiwake et al. disclose an apparatus for cooling semiconductor device. Referring to Fig.2, the module 6, a refrigerant circulating pump 7 for circulating refrigerant or cooling medium and a refrigerant cooling device 9 are integrated into a unit by a system of pipes 8 so that one apparatus 80 for cooling semiconductor devices is formed. Referring to Fig.1, the refrigerant to be circulated in the apparatus 80 by the refrigerant pump 7 is sent to the semiconductor devices cooling module 6 via a main inlet pipe 8a and a branched inlet pipe 8c (first conduit), and then the refrigerant is brought into direct contact with the surfaces of the multiplicity of the semiconductor devices 29 of a high heat generation density which are mounted in the module 6. The refrigerant cools the heat-generating devices 29 by heat transfer due to the forces convection of the refrigerant and the heat transfer due to evaporating of the refrigerant. After the refrigerant is sent from the outlet pipe 34 of the module 6 to a refrigerant cooling device 9 via branched outlet pipes 8d and a main outlet pipe 8b (second conduit).

Referring to Figs.13 and 14, the container 13a is the cold plate evaporator as claimed by the Applicant. The refrigerant is cooled by the refrigerant cooling device 9, and then it returned to the pump 7. Figs.5-11,30 and 31 present the parallel and series arrangement. The cooling device can be cooled by water (Fig.2) or by air (Fig.3).

3. Claims 1-5 and 13-15 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Molivadas (U.S. Patent Number 5,333,677).

Molivadas discloses a two-phase heat-transfer systems comprises condenser, evaporator, pump, separator and receiver. Refrigerant circuit containing a heat-transfer fluid which--while circulating, usually with the assistance of a pump, around the fluid circuit--absorbs heat, primarily by evaporation, from a heat source and releases the absorbed heat, primarily by condensation, to a heat sink. The heat source may be a material substance contiguous to the evaporator and may be an electric heating element. In regard to claims 2-5, Fig.1 shows additional volume 7 located between condenser and pump, Figs.3 and 26 show additional volume located between evaporator and condenser and Fig.50 shows additional volume located between pump and evaporator. The refrigerant pump denotes any device causing liquid refrigerant to flow through refrigerant circuit. The refrigerants include refrigerants suitable for heat pipes, tube thermosiphons, loop thermosiphons, and heat pump. Claim 1 of Molivadas contains part of the disclosure and has not been used in this rejection.

4. Claims 1,6,7,9 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakano et al. (U.S. Patent Number 6,826,923).

Nakano et al. disclose a cooling device for semiconductor elements. Referring to Fig.1, the device comprises a condenser 2, a refrigerant pump 3, a cooling fan 4 and cold plates 1. The

cold plates 1 so supplied with the refrigerant absorb heat emitted from the highly exothermic semiconductor elements and, in the course of absorption of the heat, a change in phase from a liquid refrigerant to a vapor refrigerant takes place within the cold plates 1. The vapor refrigerant is then supplied towards the condenser 2 and cooled by the fan 4, resulting in a change in phase from the vapor refrigerant to the liquid refrigerant. Referring to Fig.2, the flat micro-tube condenser 2 is of the structure in which a two-phase refrigerant, i.e., a mixture of the vapor refrigerant and the liquid refrigerant, which enters through the upper region of the inlet header 6, flows uniformly through those flat micro-tubes 7 and only the liquid refrigerant is subsequently discharged from the lower region of the outlet header 8. Therefore, it is not the "dry out" as asserted by the Applicant.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ashiwake et al. (U.S. Patent Number 5,406,807).

Ashiwake et al. disclose the invention substantially as claimed. It is noted that applicant recites a different type of condenser used in the step. The Applicant discloses the present invention uses conventional condenser coil and evaporative condenser is a conventional condenser. Therefore, it would have been obvious to one of ordinary skill in the art to select the conventional condenser coil to condense the refrigerant.

7. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ashiwake et al. (U.S. Patent Number 5,406,807) in view of Miyamoto et al. (U.S. Patent Number 5,984,647).

Ashiwake et al. disclose the invention substantially as claimed. However, Ashiwake et al. do not disclose using hermetic pump and R-134a refrigerant. Miyamoto et al. disclose hermetic pump and R-134a refrigerant in the same field of endeavor for the purpose of providing cooling in the refrigeration system. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the apparatus of Ashiwake et al. with a hermetic pump and R-134a refrigerant in view of Miyamoto et al. so as to provide cooling.

8. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ashiwake et al. (U.S. Patent Number 5,406,807) in view of Vukovic et al. (U.S. Patent Number 6,393,853) or Yano (JP 01169615).

Ashiwake et al. disclose the invention substantially as claimed. However, Ashiwake et al. do not disclose the refrigerant can be maintained at a temperature above either the ambient temperature or the dew point temperature. Vukovic et al. and Yano disclose the refrigerant can be maintained at a temperature above either the ambient temperature or the dew point temperature in the same field of endeavor for the purpose of avoid condensation. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the apparatus of Ashiwake et al. with a controller for the refrigerant can be maintained at a temperature above either the ambient temperature or the dew point temperature in view of Vukovic et al. or Yano so as to avoid condensation.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chen-Wen Jiang whose telephone number is (571) 272-4809. The examiner can normally be reached on Monday-Thursday from 8:00 to 6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Melba Bumgarner can be reached on (571) 272-4709. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3744

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chen-Wen Jiang
Primary Examiner

A handwritten signature in black ink, appearing to be 'C. W. Jiang', written in a cursive style.